查询UC3724N供应商

UNITRODE

Isolated Drive Transmitter

FEATURES

- 500mA Output Drive, Source or Sink
- 8 to 35V Operation
- Transmits Logic Signal Instantly
- Programmable Operating Frequency
- Under-Voltage Lockout
- Able To Pass DC Information Across Transformer
- Up To 600kHz Operation

DESCRIPTION

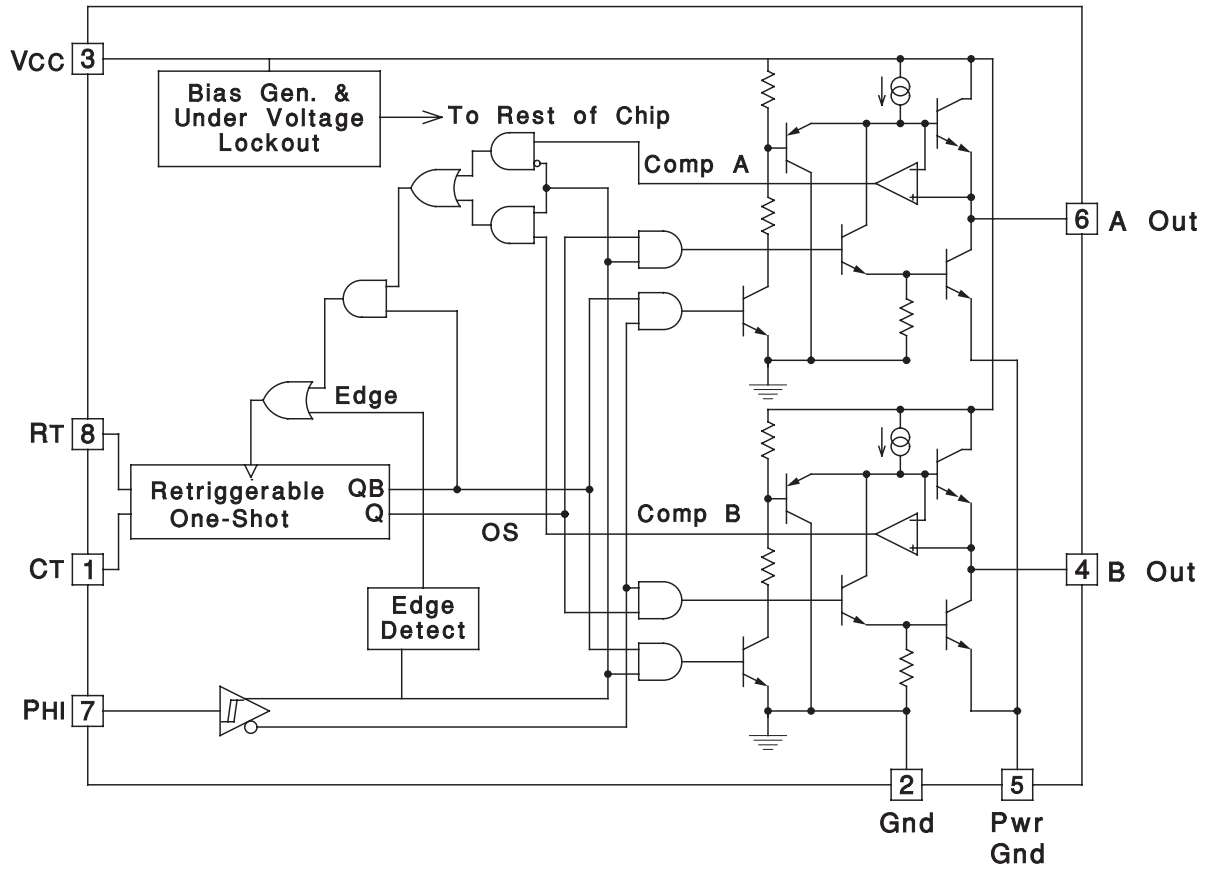
The UC1724 family of Isolated Drive Transmitters, along with the UC1725 Isolated Drivers, provide a unique solution to driving isolated power MOSFET gates. They are particularly suited to drive the high-side devices on a high-voltage H-bridge. The UC1724 devices transmit drive logic, and drive power, to the isolated gate circuit using a low cost pulse transformer.

This drive system utilizes a duty-cycle modulation technique that gives instantaneous response to the drive control transistions, and reliably passes steady-state, or DC, conditions. High frequency operation, up to 600kHz, allows the cost and size of the coupling transformer to be minimized.

These devices will operate over an 8 to 35 Volt supply range. The dual high current totem pole outputs are disabled by an uder-voltage lockout circuit to prevent spurious responses during startup or low voltage conditions.

These devices are available in 8 pin plastic or ceramic dual-inline packages, as well as 16 pin SOIC package.

BLOCK DIAGRAM



Note: Pin numbers refer to DIL-8 packages.

UDG-92037

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{IN} 40V
Source/Sink Current (Pulsed) 1A
Source/Sink Current (Continuous) 0.5A
Ouput Voltage (Pins 4, 6). . . . . –0.3 to (V_{IN} +0.3)V
PHI, RT, and CT inputs (Pins 1, 7, and 8) . . . . . –0.3 to 6V
Operating Junction Temperature (Note 2) . . . . . 150°C
Storage Temperature Range . . . . . –65°C to 150°C
Lead Temperature (Soldering, 10 Seconds) . . . . . 300°C

***Note 1**: All voltages are with respect to GND (Pin 2); all currents are positive into, negative out of part.*

***Note 2**: Consult Unitrode Integrated Circuit Databook for thermal limitations and considerations of package.*

***Note 3**: Pin numbers refer to DIL-8 packages.*

RECOMMENDED OPERATION CONDITIONS

Input Voltage . . . . . +9V to +35V
Sink/Source Load Current (each output) . . . . . 0 to 500mA
Timing Resistor. . . . . 2kW to 10kW
Timing Capacitor . . . . . 300pF to 3nF
Operating Temperature Range (UC1724) . . . –55°C<T_A<125°C
Operating Temperature Range (UC3724) . . . . . 0°C<T_A<70°C

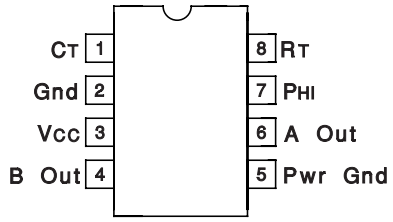
***Note 4:** Range over which the device is functional and parameter limits are guaranteed.*

ORDERING INFORMATION

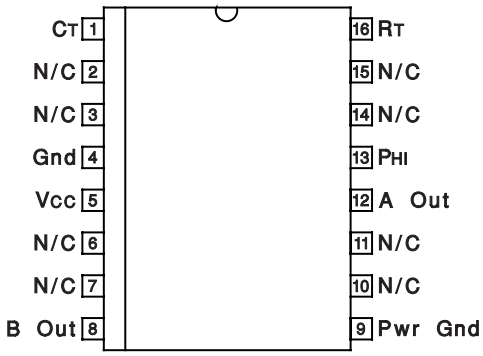
	TEMPERATURE RANGE	PACKAGE
UC1724J	–55°C to +125°C	CDIP
UC2724DW	–25°C to +85°C	SOIC-Wide
UC2724N		PDIP
UC3724DW	0°C to +70°C	SOIC-Wide
UC3724N		PDIP

CONNECTION DIAGRAMS

DIL-8 (Top View)
J Or N Package



SOIC-16 (Top View)
DW Package



ELECTRICAL CHARACTERISTICS: Unless otherwise stated, V_{CC} = 20V, R_T = 4.3kΩ, C_T = 1000pF, no load on any output and these specifications apply for: –55°C < T_A < 125°C for the UC1724, –25°C < T_A < 85°C for the UC2724, and 0°C < T_A < 70°C for the UC3724. T_A=T_J.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Under-Voltage Lockout					
Start-Up Threshold	V_{IN} Rising		7.75	9.5	V
Threshold Hysteresis		0.4	1.0	1.5	V
Retriggerable One-Shot					
Initial Accuracy	T_J = 25°C	1.54	1.9	2.25	µs
Temperature Stability	Over Operating T_J	1.0		2.9	µs
Voltage Stability	V_{IN} = 10 to 35V		0.2	0.5	%/V
Operating Frequency	L_{LOAD} = 1.4mH	100	150	200	kHz
Minimum Pulse Width	RT = 2k CT = 300pF	100	500	1200	ns
Operating Frequency	RT = 2k CT = 300pF L_{LOAD} = 1.4mH	500	750	1100	kHz

ELECTRICAL CHARACTERISTICS: Unless otherwise stated, V_{CC} = 20V, R_T = 4.3kΩ, C_T = 1000pF, no load on any output and these specifications apply for: –55°C < T_A < 125°C for the UC1724, –25°C < T_A < 85°C for the UC2724, and 0°C < T_A < 70°C for the UC3724. T_A=T_J.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Phi Input (Control Input)					
HIGH Input Voltage		2.0			V
LOW Input Voltage				0.8	V
HIGH Input Current	V_{IH} = +2.4V	–220	–130		µA
LOW Input Current	V_{IL} = +0.4V	–600	–300		µA
Delay to One-Shot				350	ns
Delay to Output				250	ns
Output Drivers					
Output Low Level	I_{SINK} = 50mA		0.3	0.4	V
	I_{SINK} = 250mA		0.5	2.1	V
Output High Level (Volts Below V_{CC})	I_{SOURCE} = 50 mA		1.5	2.1	V
	I_{SOURCE} = 250 mA		1.7	2.5	V
Rise/Fall Time	No load		30	90	ns
Total Supply Current					
Supply Current	C_T = 1.4V		15	30	mA

Additional Information

Please refer to the following Unitrode application topics.

[1] Application Note U-127, *Unique Chip Pair Simplified Isolated High-Side Switch Drive* by John A. O'Connor.

[2] Design Note DN-35, *IGBT Drive Using MOSFET Gate Drivers* by John A. O'Conner.

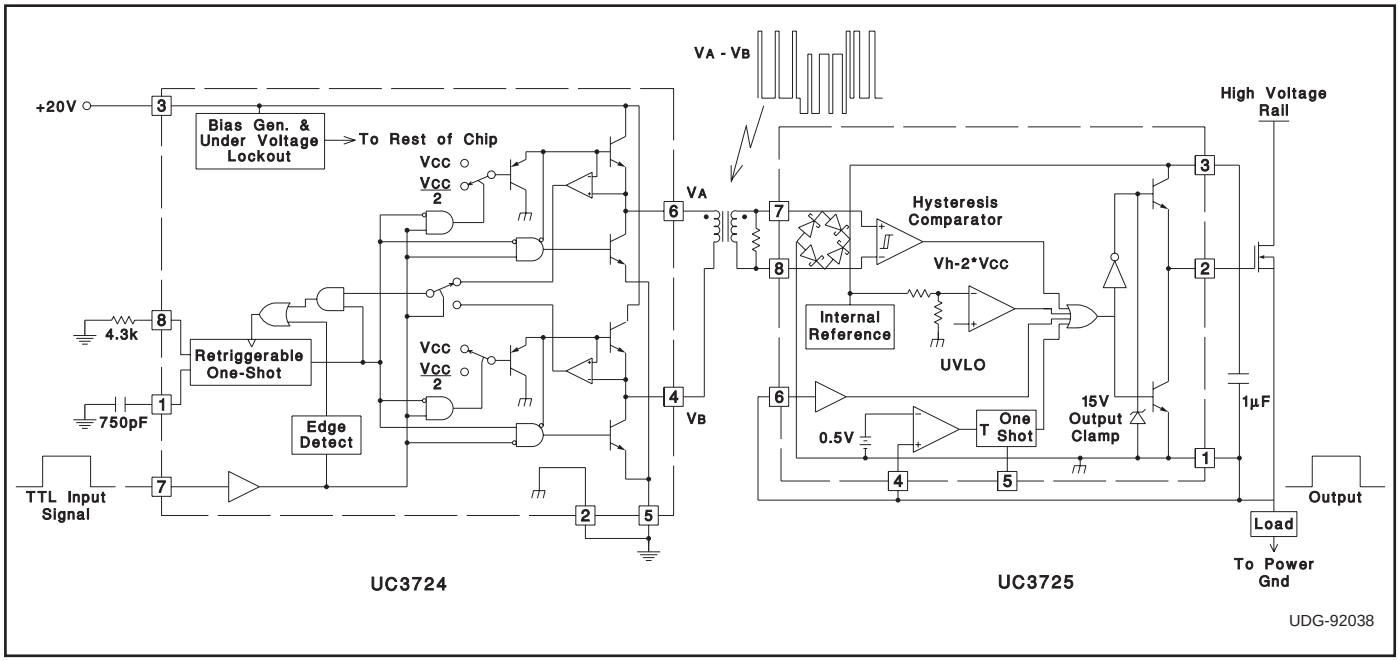


Figure 1. Typical application

UNITRODE CORPORATION
7 CONTINENTAL BLVD. • MERRIMACK, NH 03054
TEL. (603) 424-2410 FAX (603) 424-3460

IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its semiconductor products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF TI PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.

Copyright © 1999, Texas Instruments Incorporated